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INTERNATIONAL STANDARD

Electric motor-operated tools – Dust measurement procedure – Part 2-22: Particular requirements for hand-held cut-off machines and wall chasers

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IEC 63241-2-22 has been prepared by IEC technical committee 116: Safety of motor-operated electric tools. It is an International Standard.

The text of this International Standard is based on the following documents:

Draft	Report on voting
116/776/CDV	116/846A/RVC

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

This document is to be used in conjunction with the first edition of IEC 63241-1:2023.

This document supplements or modifies the corresponding clauses in IEC 63241-1, so as to convert it into the IEC Standard: *Particular requirements for hand-held cut-off machines and wall chasers*.

Where a particular subclause of Part 1 is not mentioned in this Part 2-22, that subclause applies as far as relevant. Where this standard states "addition", "modification" or "replacement", the relevant text in Part 1 is to be adapted accordingly.

The following print types are used:

– requirements: in roman type;

– *test specifications: in italic type;*

– notes: in small roman type.

The terms defined in Clause 3 are printed in **bold typeface**.

Subclauses, notes and figures which are additional to those in Part 1 are numbered starting from 101.

A list of all parts of the IEC 63241 series, under the general title: *Electric motor-operated tools – Dust measurement procedure*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

NOTE The attention of National Committees is drawn to the fact that equipment manufacturers and testing organizations can need a transitional period following publication of a new, amended or revised IEC publication in which to make products in accordance with the new requirements and to equip themselves for conducting new or revised tests.

It is the recommendation of the committee that the content of this publication be adopted for implementation nationally not earlier than 36 months from the date of publication.

ELECTRIC MOTOR-OPERATED TOOLS – DUST MEASUREMENT PROCEDURE –

Part 2-22: Particular requirements for hand-held cut-off machines and wall chasers

1 Scope

IEC 63241-1:2023, Clause 1 is applicable except as follows:

Addition:

This part of IEC 63241 applies to hand-held **cut-off machines** and **wall chasers**.

2 Normative references

IEC 63241-1:2023, Clause 2 is applicable, except as follows:

Addition:

IEC 63241-1:2023, *Electric motor-operated tools – Dust measurement procedure – Part 1: General requirements*

EN 771-4:2011, *Specification for masonry units – Part 4: Autoclaved aerated concrete masonry units*
EN 771-4:2011/AMD1:2015

EN 1339:2003, *Concrete paving flags – Requirements and test methods*

3 Terms and definitions

IEC 63241-1:2023, Clause 3 is applicable except as follows:

Addition:

3.101
cut-off machine
hand-held tool designed to cut by means of the periphery of a rotating abrasive cut-off wheel (bonded reinforced wheel or diamond cutting wheel) where the wheel is fixed on a spindle

3.102
wall chaser
cut-off machine on which one or more diamond cutting wheels are mounted and used for non-through cutting operations

4 Test procedure

IEC 63241-1:2023, Clause 4 is applicable except as follows:

4.3 Operating conditions

Addition:

***Cut-off machines** intended to cut materials such as concrete, brick and masonry are tested under load observing the conditions shown in Table 101.*

Table 101 – Operating conditions for cut-off machines

Material and set-up	Concrete slabs with minimum dimensions of 400 mm × 400 mm, maximum dimensions of 600 mm × 600 mm and a thickness of (50 ± 5) mm in accordance with EN 1339:2003. The concrete slabs shall be stored for at least six weeks with the last three weeks under dry conditions. During storing, the distance between the slabs shall be at least one slab thickness. The slabs shall have the following specifications in accordance with the following clauses of EN 1339:2003: Class 3 (5.3.3.2), Class 4 (5.3.4.2), Class 70 (5.3.6.2) for 400 mm × 400 mm, Class 45 (5.3.6.2) for 400 mm × 600 mm and 600 mm × 600 mm. Concrete slabs are placed horizontally on a table with a suitable working height (approximately 900 mm). The slabs are arranged without any gaps in order to achieve a plane area with a total length of approximately 2,4 m. See Figure 101.
Orientation and operation	Make slots in the concrete slab with a depth as follows: – rated capacity ≤ 180 mm: (20 ± 1) mm; – rated capacity > 180 mm: (40 ± 2) mm. The slots are made along the approximate 2,4 m length. The distance between the slots shall be large enough so that the guard (if any) does not cover the previous cutting zone. For each slot, the tool shall enter the slabs from the side without plunging. The cut stops inside the material after 2,3 m. During cutting, the entire surface of the guide plate (if any) or all guide rollers (if any) shall be in contact with the concrete slab. The tool shall be switched off at the end of the cut while it is in contact with the material.
Tool bit/settings	New or re-sharpened diamond wheel as specified by the manufacturer for cutting concrete at the beginning of each of the three tests. Speed setting devices, if any, shall be adjusted to the setting specified for cutting-off concrete.
Feed force	The feed force applied to the tool shall be sufficient to ensure stable operation with good performance.
Test	During the entire test, a minimum total length of 18,4 m of cutting (8 cuts) shall be performed for tools with a rated capacity ≤ 180 mm and a minimum total length of 13,8 m of cutting (6 cuts) shall be performed for tools with a rated capacity > 180 mm. The rest time of each test cycle may be used for re-sharpening the wheel, if necessary. This shall be done outside the test room.

***Wall chasers** are tested under load observing the conditions shown in Table 102.*

Table 102 – Operating conditions for wall chasers

Material and set-up	Blocks from autoclaved aerated concrete in accordance with EN 771-4:2011 and EN 771-4:2011/AMD1:2015 with a thickness of at least 100 mm and without hollow sections. The material shall be stored in a dry environment for at least 3 weeks prior to testing. During that time, the blocks shall be stored with a distance of at least one block thickness between each of them. Blocks are placed on a A-support, see Figure 103, with 15° inclination with the lower workpiece support being (500 ± 50) mm above the floor. The blocks are arranged without gaps to achieve an area of approximately 4 m length and 1,3 m height, see Figure 102.
Orientation and operation	Make slots in the blocks, the tool being set to $90\,^{+5}_{-0}$ % of the maximum depth of cut. The distance between the two slots shall be either equal to the cutting depth of the slots or be the maximum possible distance, whichever is less. The distance between the slots shall be large enough so that the guard (if any) does not cover the previous cutting zone. For each slot, the tool shall enter the blocks from the side/top without plunging. The cut stops inside the material. 2/3 of the total length of cuts shall be done in horizontal direction (length of slot $2{,}4\,^{+0{,}1}_{-0}$ m), 1/3 of the total length cuts in vertical direction downwards (length of channel $1{,}2\,^{+0{,}1}_{-0}$ m), see Figure 102. During cutting, the entire surface of the guide plate (if any) or all guide rollers (if any) shall be in contact with the blocks. The tool shall be switched off at the end of the cut while it is in contact with the material.
Tool bit/settings	New or re-sharpened diamond wheel as specified by the manufacturer for cutting concrete at the beginning of each of the three tests. Speed setting devices, if any, shall be adjusted to the setting specified for cutting concrete.
Feed force	The feed force applied to the tool shall be sufficient to ensure stable operation with good performance.
Test	During the entire test, a total length of slots to be cut shall be $40\,^{+0{,}5}_{-0}$ m for tools with a maximum depth of cut ≤ 30 mm, and a total length of slots to be cut shall be $35\,^{+0{,}5}_{-0}$ m for tools with a maximum depth of cut > 30 mm. The rest time of the test cycles may be used for re-sharpening the wheels, if necessary. This shall be done outside the test room.

5 Instrumentation

IEC 63241-1:2023, Clause 5 is applicable.

6 Information to be reported

IEC 63241-1:2023, Clause 6 is applicable except as follows:

Addition to item j):

j) The mean value for the concentration of the **respirable dust** is also required.

Dimensions in millimetres

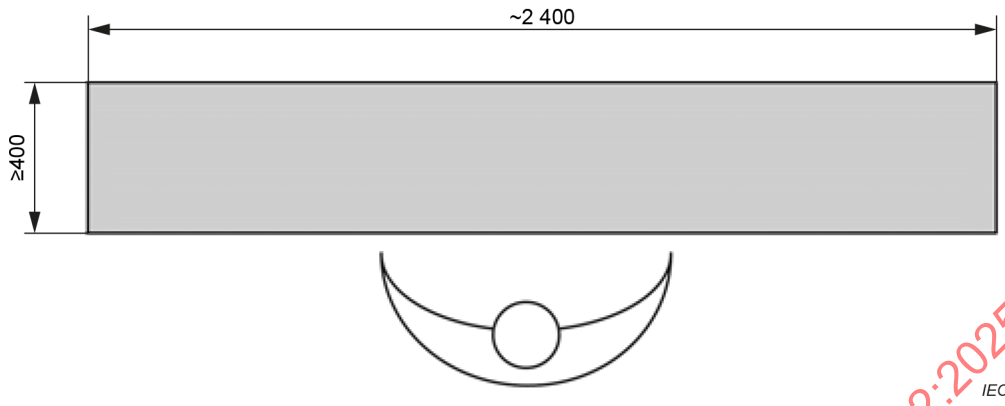
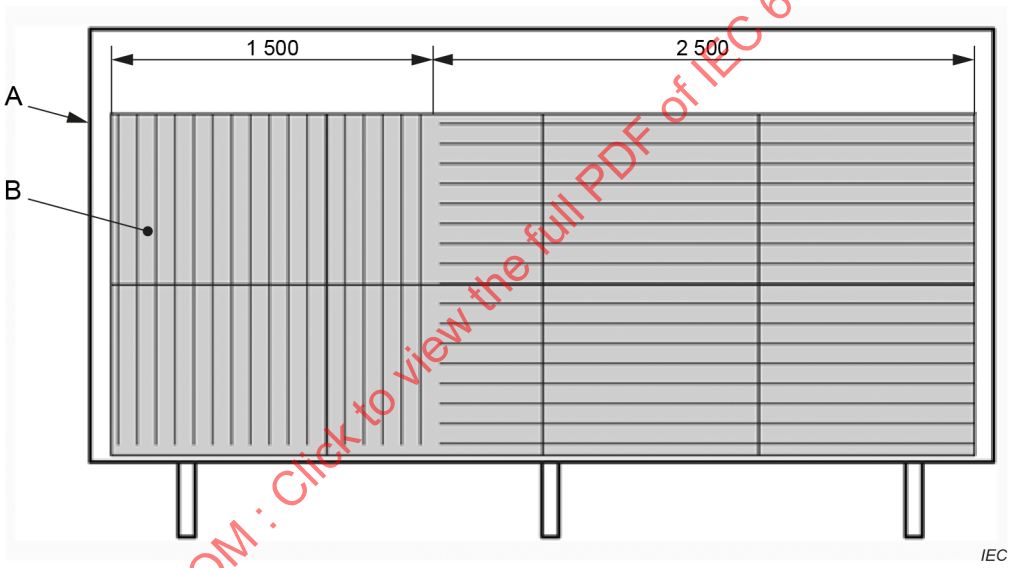


Figure 101 – Test set-up for cut-off machines

Dimensions in millimetres



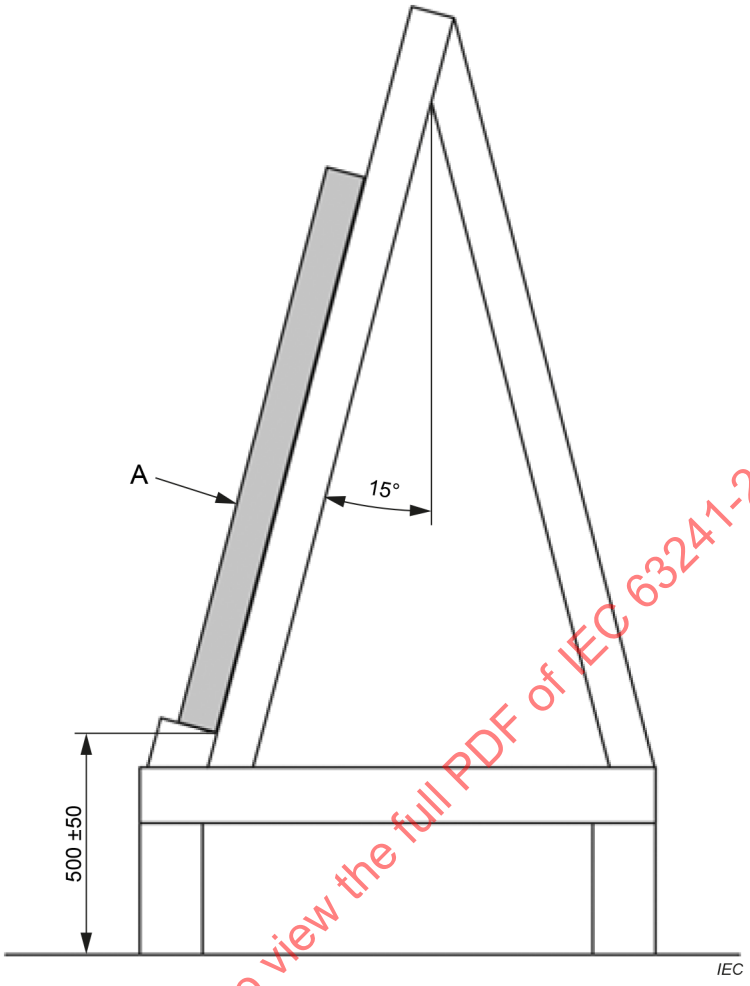
Key

A A-support

B workpiece (autoclaved aerated concrete blocks)

Figure 102 – Test set-up for wall chasers

Dimensions in millimetres



Key

A workpiece

Figure 103 – A-support